

Appl. No. 10/765,808
Amdt. Dated 07/31/2009
Response to Office Action of 06/03/2009

Attorney Docket No.: N1085-00256
[TSMC2003-0899]

REMARKS/ARGUMENTS

Claims 1-7, 9-12 and 29-32 were previously pending in the subject patent application and each was rejected.

Claims 1, 10-12 and 31-32 are amended herein. Claims 7, 9 and 29-30 are
5 cancelled.

Applicants respectfully request re-examination, reconsideration and allowance of each of pending claims 1-6, 10-12 and 31-32.

I. Claim Rejections – 35 U.S.C. § 102

10 In paragraph 2 of the subject Office Action, claims 1-7 and 29 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,998,932 to Lenz. Applicants respectfully submit that these claim rejections are overcome for reasons set forth below.

Claims 1 stands as the independent claim of the claims rejected under this section, with claim 29 having been cancelled. Claim 1 recites the features of:

15 a focus ring maintained at a temperature less than a temperature of said substrate while an etching operation is carried out upon said substrate; and
20 only a single portion of said focus ring extending inwardly, said single portion extending substantially continuously directly underneath a peripheral portion of said chuck that extends directly underneath a peripheral portion of said substrate.

25 The Examiner concedes, in paragraph 13 of the subject Office Action, that "*Lenz fails to teach said focus ring maintainable at a temperature no greater than a temperature of said substrate while etching operation is carried out upon said substrate*". Since Lenz does not teach maintaining the temperature at a temperature *no greater* than a temperature of the substrate, Lenz further does not teach the feature of

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the focus ring maintained at a temperature *less than* the temperature of the substrate while the etching operation is carried out.

Independent claim 1 is therefore distinguished from Lenz for at least this reason.

5 The 102(b) rejection of independent claim 1, and also of claims 2-6, which depend from independent claim 1, should therefore be withdrawn.

10 The Ishii reference, see *infra*, also does not teach the feature of the focus ring maintained at a temperature less than the temperature of the substrate during the etching operation. In Ishii, the coolant reservoir 35 or the temperature-adjusting heater 92 is directed to cooling the wafer W by cooling the rest table 3 upon which wafer W lies. Focus ring 6 is also in contact with portions of rest table 3. Ishii, however, does not teach or suggest cooling the focus ring 6 to a cooler temperature than the wafer and it would be speculative to make such an assumption, especially since the focus ring merely rests on the cooled rest table 3. It is because of this cooling feature recited in claim 1, that the subject invention provides the advantage of reduced particle
15 contamination because the polymers that are generated during an etching operation, preferably adhere to the cold focus ring as opposed to the wafer.

Independent claim 1 is therefore distinguished from Lenz in view of Ishii for at least these reasons. Dependent claims 2-6, 10-12 and 31-32 are similarly distinguished because they each ultimately depend from claim 1.

20 Claim 1 also recites the feature that only a single portion of the focus ring extends inwardly and this single portion extends directly underneath a peripheral portion of a chuck that is directly underneath a peripheral portion of the wafer. Lenz does not provide this feature as Lenz includes two portions that extend inwardly: a portion of feature 302(a) and a portion of feature 302(b). Claim 1 is therefore further distinguished
25 from Lenz. It is worth pointing out that Ishii also does not disclose this feature because none of the focus rings provided in Ishii extend directly underneath a wafer and none of

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the focus rings in Ishii extend directly underneath the chuck, much less underneath peripheral portions of both the chuck and a wafer.

Claim 1 is thus further distinguished from Lenz and it also is distinguished from Lenz in view of Ishii.

5 Claims 7 and 29 have been cancelled. The rejection of claims 1-7 and 29 under 35 U.S.C. § 102(b), should be withdrawn.

II. Claim Rejections – 35 U.S.C. § 103

10 In paragraph 11 of the subject Office Action, claims 9-12 and 30-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lenz in view of US Pat. No. 5,529,657 to Ishii. This rejection is overcome for reasons set forth below.

Claims 9 and 30 have been cancelled and claims 10-12, 31 and 32 depend from claim 1 which is distinguished from Lenz in view of Ishii, as above.

15 As above, Ishii fails to teach any focus ring or focus ring portion formed of an oxygen-containing/oxygen impregnated material under a chuck, above which a wafer is disposed. Applicants point out that the inner annular member 6b of Ishii is formed of a conductive material (column 4, lines 53-54) and is not disposed underneath a chuck in FIG. 5. None of the other focus rings taught by Ishii extend under a chuck or a wafer. Ishii therefore does not make up for the acknowledged deficiencies of Lenz.

20 Because claims 10-12 and 31-32 depend from claim 1 and further because claims 9 and 30 have been cancelled, the rejection of claims 9-12 and 30-32 under 35 U.S.C. § 103, should be withdrawn.

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CONCLUSION

Based on the foregoing, each of pending claims 1-6, 10-12 and 31-32 is in allowable form and the application in condition for allowance, which action is respectfully and expeditiously requested.

5 The Assistant Commissioner for Patents is hereby authorized to charge any fees necessary to give effect to this filing and to credit any excess payment that may be associated with this communication, to Deposit Account 04-1679.

Respectfully submitted,

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